भारतीय मानक
Indian Standard

IS 17502 : 2020

चिकनी मिट्टी का मिथायलिन ब्लू सूचकांक — परीक्षण की पद्धति

Methylene Blue Index of Clay — Method of Test

ICS 81.060.10

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Ceramicware Sectional Committee, CHD 09

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Ceramicware Sectional Committee had been approved by the Chemical Division Council.

Determination of methylene blue index is based on the adsorption of methylene blue dye by clay. It is directly related to fundamental properties like cation exchange capacity, dry bond strength and casting rate. Methylene blue index correlates well with ceramic forming properties of clay.

In the formulation of this standard, considerable assistance has been derived from the following publication:

ASTM C 837-09	Standard Test Method for Methylene Blue Index of Clay

The composition of the Committee responsible for formulation of this standard is given in Annex A.

In reporting the result of a test or analysis made in accordance with this standard, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

METHYLENE BLUE INDEX OF CLAY — METHOD OF TEST

1 SCOPE

This standard prescribes the method of test for the determination of methylene blue index of clay.

2 REFERENCES

The standards listed below contain provisions which through reference in this text, constitute previsions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

IS No.	*Title*
266 : 1993	Sulphuric acid — Specification (*third revision*)
1070 : 1992	Reagent grade water — Specification (*third revision*)
1997 : 2008/ISO 385 : 2005	Laboratory glassware — Burettes (*third revision*)
2619 : 2018/ISO 3819 : 2015	Glass beakers — Specification (*third revision*)
2781 : 2004	Glossary of terms relating to ceramic ware (*second revision*)

3 TERMINOLOGY

For the purpose of this standard, the terms and definitions given in IS 2781 shall apply.

4 APPARATUS

4.1 Balance, accurate to 0.01 g.

4.2 Mixer or Magnetic Stirrer

4.3 pH Meter or pH Paper

4.4 Beaker, of 600 ml capacity — *see* IS 2619.

4.5 Burette, of 25 ml capacity — *see* IS 1997.

4.6 Medicine Dropper or Glass Stirring Rod

4.7 Filter Paper, baroid no.987 or Whatman no. 42.

5 REAGENTS

5.1 Distilled water — *see* IS 1070.

5.2 Methylene Blue solution, 1 ml = 0.01 milliequivalents.

Dissolve 3.739 g of methylene blue trihydrate powder in 1 000 ml of de-ionized water.

NOTE — Methylene blue solution is to be stored in darkness.

5.3 Sulphuric acid, 0.1 N — *see* IS 266.

6 PROCEDURE

6.1 Take 2 g of dried clay sample and place it in the beaker.

NOTE — Store the clay in a desiccator if it cannot be tested immediately after drying at 105-110 °C for 1 h.

6.2 Add 300 ml of distilled water to the beaker. Stir it thoroughly using the mixer or magnetic stirrer (*see* **4.2**) till the clay is uniformly dispersed.

6.3 Determine the *p*H of the slurry using *p*H meter or *p*H paper (*see* **4.3**).

6.4 Stir the slurry. Simultaneously add sufficient quantity of sulphuric acid (*see* **5.3**) so that the pH of the slurry is between 2.5 and 3.8. Continue stirring for 10 to 15 minutes after addition of acid.

6.5 Determine the *p*H of the slurry again. Add sulphuric acid again if required, so that *p*H is between 2.5 and 3.8.

6.6 Take methylene blue solution in the burette. Add 5 ml of methylene blue solution to the slurry and stir for 1 to 2 mins.

6.7 Using the dropper or glass stirring rod, take a drop of the slurry and place it on the edge of the filter paper.

6.8 Observe the drop. The end point is indicated by the formation of a light blue halo around the drop.

6.9 Continue adding methylene blue solution to the slurry in increments of 1 ml with 1 to 2 minutes of stirring in between, followed by testing for end point as prescribed in **6.7** and **6.8**.

6.10 After end point is obtained, stir the slurry for 2 more minutes and repeat the steps prescribed in **6.7** to **6.8**.

7 CALCULATION

7.1

$$MBI = \frac{E \times V}{W} \times 100$$

where

MBI = methylene blue index, in milliequivalents/100g clay;

E = milliequivalents of methylene blue per ml;

V = volume of methylene blue solution consumed, in ml; and

W = mass of dry material.

7.2 The formula can be simplified if the mass of specimen taken is 2 g (*see* **6.1**) and the concentration of methylene blue solution is 0.01 milliequivalents/ml (*see* **5.2**). In this case,

$$MBI = \frac{0.01 \times V}{2} \times 100 = 0.5\,V.$$

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Ceramicware Sectional Committee, CHD 09

Organization	*Representative(s)*
CSIR-Central Glass and Ceramic Research Institute, Kolkata	Dr K. Muraleedharan (***Chairman***)
All India Institute of Hygiene and Public Health, Kolkata	Prof R. C. Srivastava Dr Nibedita Das (*Alternate*)
All India Pottery Manufacturers' Association, Kolkata	Representative
Associated Soapstone Distributing Co Pvt Ltd, Jaipur	Shri Dilip Jha Shri Rajendra Pareek (*Alternate* I) Shri Amit Sharma (*Alternate* II)
Aditya Birla Insulator, West Bengal	Representative
Asian Granito India Ltd, Gujarat	Representative
Ahmedabad Pottery Manufacturers Association, Naroda	Representative
IIT-BHU, Varanasi	Prof Devendar Kumar Prof Om Prakash (*Alternate*)
BHEL, Bengaluru	Representative
Bhabha Atomic Research Center, Mumbai	Dr Deep Prakash Dr Abhijit Ghosh (*Alternate*)
C-met, Thrissur, Kerala	Representative
CSIR - Central Glass and Ceramic Research Institute, Kolkata	Dr H. S. Tripathi
Cera Sanitary ware Ltd, Kadi	Shri Vivek Narayan Shri Pramod Chauhan (*Alternate*)
Chem & Allied Products Export Insp Council, Kolkata	Shri S. K. Ghosh
Controller of Quality Assurance, Kanpur	Shri V. R. Chaudhary Dr K. C. Gupta (*Alternate*)
Govt College of Engg & Ceramic Technology, Kolkata	Prof Ram Chandra Das Prof Rituparno Sen (*Alternate*)
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Industries Commissioner, Gandhinagar	Shri R. D. Barhatt
Johnson Tiles, Mumbai	Representative
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Porcelain Enamelers Association, Kolkata	Shri B. S. Ganguly Shri S.K.Mukherjee (*Alternate*)

Organization	*Representative(s)*
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SPL Ltd, Jhajjar, Haryana	Dr Ashutosh Goyal Shri T. Shridhar (*Alternate*)
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Shri Sachin S. Menon
Scientist 'C' (CHD), BIS

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Amendments Issued Since Publication

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